

Federal law provides that violation of any terms of this Order may subject Respondents to a civil penalty of up to \$16,500 per day of violation, assessed by an appropriate United States District Court, under SDWA § 1431(b), 42 U.S.C. § 300i(b), as modified by the Debt Collection Improvement Act, 31 U.S.C. § 3701 and codified at 40 C.F.R. § 19.4.

FINDINGS OF FACT

1. Range Resources Corporation ("RRC") is a Fort Worth, Texas based independent natural gas company engaged in the exploration, development and acquisition of primarily natural gas properties in the Southwestern and the Appalachian regions of the United States. RRC is a Delaware corporation with its common stock listed and traded on the New York Stock Exchange under the symbol "RRC."
2. Range Production Company ("RPC") is a wholly-owned subsidiary of Range Resources Corporation operating in the State of Texas.
3. At all times relevant to this Order, RRC and RPC (hereinafter "Respondents") owned or operated the natural gas production facilities (collectively, "Gas Wells") identified as the Butler Unit Well 1-H ("Butler Well") (permitted at Atwood, JB Survey, Abstract #802, Hood County, 660 feet from the N line and 986 feet from the SE line) and the Teal Unit Well 1-H ("Teal Well") (permitted at Atwood, JB Survey, Abstract #802, Hood County, 703 feet from NE line and 948 feet from SE line).
4. Respondents contracted for and directed the drilling of the Butler Well in June 2009 and completed hydraulic fracture stimulation operations in August 2009. Gas production began from the Butler Well in August 2009.
5. Respondents contracted for and directed the drilling of the Teal Well in March and April of 2009 and completed hydraulic fracture stimulation operations in April 2009. Gas production began from the Teal Well in August 2009.
6. The Trinity Aquifer exists under twenty Texas counties, including Parker and Hood counties where the Gas Wells and the private drinking water wells described below are located.
7. As set forth more fully below, two domestic drinking water wells ("Domestic Well 1" and "Domestic Well 2"), located near the Gas Wells and utilizing the Trinity Aquifer, have been shown to contain methane, benzene, toluene, ethane, propane, and hexane. Some of these contaminants are at levels that may endanger the health of persons.
8. Domestic Well 1 lies approximately 120 feet in horizontal distance to the east-northeast from the track of the horizontal section of the Butler Well bore.
9. Domestic Well 2 lies approximately 470 feet in horizontal distance to the southeast from the track of the horizontal section of the Butler Well bore.
10. Domestic Wells 1 and 2 provide drinking water to nine people including both adults and children.

11. The Gas Wells are the only gas production facilities within approximately 2,000 feet of Domestic Wells 1 and 2.
 12. Domestic Well 1 (32.56312 latitude, -97.79144 longitude) was drilled in April 2005 and was immediately used for human consumption, building construction, and landscape irrigation.
 13. Neither the consumer, nor the well drilling service, observed or reported that the water from Domestic Well 1 contained any noticeable natural gas at the time of its drilling.
 14. In late December 2009, approximately four months after the Gas Wells began producing gas, the owner of Domestic Well 1 first noticed that the water had begun to effervesce.
 15. On July 26, 2010, the down-hole pump in Domestic Well 1 began experiencing mechanical problems soon identified by a water well service company as "gas locking."
 16. "Gas locking" is a condition sometimes encountered in a down-hole pump when dissolved gas is released from solution by the action of the pump and prevents the pump from moving water.
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17. In addition, on July 26, 2010, the gas in Domestic Well 1 was determined to be flammable.
 18. On August 8, 2010, the owner contracted for water samples to be taken from Domestic Well 1. The samples showed the presence of benzene (3.1 µg/L), toluene (2.0 µg/L), dissolved methane (7,810 µg/L) and dissolved ethane (1,580 µg/L).
 19. On August 17, 2010, TRRC took water samples from Domestic Well 1 that showed the presence of benzene (6.84 µg/L) and toluene (6.12 µg/L).
 20. The consumer and well owner removed Domestic Well 1 from service during the first week of September 2010 due to the rising gas content within the drinking water and concerns with water quality, indoor air quality and potential explosivity.
 21. EPA took samples of the gas from Domestic Well 1 and the Butler Well production stream on October 26, 2010 to perform compositional analysis and isotopic fingerprinting.
 22. Isotopic fingerprinting is a method for determining the ratio of different isotopes of a particular element in an investigated material. Understanding this ratio helps scientists know the source of the investigated material.
 23. Methane is a molecule comprised of one carbon atom for every four hydrogen atoms. Its chemical formula is CH₄.

24. While the carbon atoms in methane may be chemically identical, they may have different numbers of neutrons and different atomic mass. Atoms of the same element with different atomic mass are known as isotopes.
25. The isotopic fingerprint analysis of methane obtained on October 26, 2010 from Domestic Well 1 ($\delta^{13}\text{C} = -47.05$, $\delta\text{D} = -188.5$) and the isotopic fingerprint analysis of commingled produced gas from the Butler and Teal Wells ($\delta^{13}\text{C} = -46.60$, $\delta\text{D} = -183.9$) indicates that both gases are thermogenic in origin and likely to be from the same source.
26. The term "thermogenic," when applied to a gas like methane, means that the gas formed through deep geologic processes involving pressure, heat and time. The term is used to distinguish such gas from biogenic gas, which is formed through biological processes.
27. The compositional analysis of the gas obtained on October 26, 2010 showed that both gases contain significant amounts of heavier hydrocarbon components and that the hydrocarbon portion of each gas contains the same components. The presence of these hydrocarbons further indicates the presence of gas in Domestic Well 1 is likely to be due to impacts from gas development and production activities in the area.
28. On October 26, 2010, EPA also collected samples of water from Domestic Well 1 that showed the presence of dissolved methane (20,100 $\mu\text{g/L}$), ethane (5,27 $\mu\text{g/L}$), propane (2,820 $\mu\text{g/L}$), benzene (4.55 $\mu\text{g/L}$), toluene (3.47 $\mu\text{g/L}$), and hexane (31.7 $\mu\text{g/L}$).
29. The chemicals found in Domestic Well 1 pose a variety of risks to health of persons.
30. Methane poses a risk of explosion and fire. In large concentrations in air, it may pose a risk of asphyxiation. Natural methane, unlike treated methane, pumped to homes for cooking and heating, is odorless and colorless. Usually a minute amount of an odorant such as t-butyl mercaptan is added to natural gas used by consumers.
31. Benzene is a known human carcinogen. It can also cause anemia, neurological impairment and other adverse health impacts.
32. Hexane, propane, ethane and toluene may also cause adverse health impacts if inhaled or ingested.
33. On November 16, 2010, EPA advised the consumers of Domestic Well 1 to continue not using the water due to water quality and potential explosivity concerns.
34. Domestic Well 2 (32.56505 latitude, -97.79041 longitude) was drilled and completed in August 2002 and was immediately used for human consumption and landscape irrigation.
35. Neither the owner, nor the well drilling service company, observed or reported that the water from Domestic Well 2 contained any noticeable natural gas at that time.

36. In May 2010, the owner of Domestic Well 2 first noticed that the water had begun to effervesce.
37. On August 26, 2010, the consumer contracted for water samples to be taken from Domestic Well 2. The samples showed the presence of dissolved methane (10.9 µg/L). EPA sampled the water from Domestic Well 2 on October 26, 2010. Results from this sample showed the presence of dissolved methane (627 µg/L), ethane (38.5 µg/L), and propane (2.05 µg/L).
38. On November 23, 2010, EPA advised the consumers of Domestic Well 2 of the levels of natural gases in the water and that they may wish to cease using the water due to water quality and potential explosivity concerns.
39. EPA has consulted with the appropriate State of Texas and local authorities, including the Railroad Commission of Texas, the Texas Commission on Environmental Quality, and the Parker County fire marshal, regarding the presence of contaminants in the source of drinking water identified below and disclosed the potential endangerment to the health of persons.
40. The Railroad Commission of Texas ("TRRC") is the state agency with regulatory authority over oil and gas production activities and the potential endangerment discussed below. EPA has informed the TRRC of the endangerment and the proposed issuance of this Order. EPA has shared data and findings related to this matter with the TRRC and has consulted with the TRRC on the accuracy of the information upon which this Order is based. EPA has determined that that appropriate State and local authorities have not taken sufficient action to address the endangerment described herein and do not intend to take such action at this time.
41. The contaminants identified herein may present an imminent and substantial endangerment to the health of persons because methane in the levels found by EPA are potentially explosive or flammable, and benzene if ingested or inhaled could cause cancer, anemia, neurological impairment and other adverse health impacts.

CONCLUSIONS OF LAW

42. Benzene, methane, toluene, ethane and propane are "contaminants," as that term is defined in SDWA § 1401(6), 42 U.S.C. § 300f(6) and 40 C.F.R. § 141.2.
43. The Trinity Aquifer is an "underground source of drinking water," as that term is defined at 40 C.F.R. § 144.3.
44. The contaminants identified herein are present in the Trinity Aquifer.

45. Respondents are "person(s)," as defined by Section 1401(12) of the Act, 42 U.S.C. § 300f(12).
46. Respondents caused or contributed to the endangerment identified herein.
47. In accordance with SDWA § 1431(a), 42 U.S.C. § 300i(a), EPA has consulted with appropriate State and local authorities to confirm the correctness of the information on which this action is based.
48. EPA has determined that that appropriate State and local authorities have not taken sufficient action to address the endangerment described herein and do not intend to take such action at this time.
49. EPA has determined that this action is necessary to protect the health of persons.

ORDER AND GENERAL PROVISIONS

50. Based on these findings and pursuant to the authority of Section 1431(a) of the Act, 42 U.S.C. § 300i(a), EPA Orders that Respondents take the following actions:
 - A) Within twenty-four (24) hours of receipt of this Order, Respondents shall notify EPA in writing whether they intend to comply with this Order.
 - B) Within forty-eight (48) hours of receipt of this Order, Respondents shall provide replacement potable water supplies for the consumers of water from Domestic Well 1 and Domestic Well 2.
 - C) Within (48) forty-eight hours of receipt of this Order, Respondents shall install explosivity meters, approved by EPA, in the dwellings served by Domestic Wells 1 and 2.
 - D) Within five (5) days of receipt of this Order, Respondents shall submit to EPA a survey listing and identifying the location description (latitude and longitude) of all private water wells within 3,000 feet of the Butler wellbore track and 3,000 feet of the Teal wellbore track and all of the Lake Country Acres (TX1110059) public water supply system wells. This submittal shall include a plan for EPA's approval, to sample those wells identified in Order to determine if any of those wells have been impacted. The plan shall include head space (air) and dissolved constituent (water) sampling. The head space sampling shall commence no later than five (5) days after submittal of the plan.

- E) Within fourteen (14) days of receipt of this Order, Respondents shall submit to EPA, for approval, a plan to conduct soil gas surveys and indoor air concentration analyses of the properties and dwellings served by Domestic Wells 1 and 2.
 - F) Within sixty (60) days of receipt of this Order Respondents shall develop, and submit to EPA for approval, a plan to: 1) identify gas flow pathways to the Trinity Aquifer; 2) eliminate gas flow to the aquifer if possible, and 3) remediate areas of the aquifer that have been impacted.
51. Each submittal made pursuant to this Order shall be sent by U.S. mail or by certified mail, with receipt requested to the address below. Electronic submittals will also be accepted.

U.S. EPA, Region 6
Water Enforcement Branch
1445 Ross Ave., Suite 1200
Dallas, TX 75202
Attn.: Chris Lister, (6EN-WR)
FAX: (214) 665-6672
Email: lister.chris@epa.gov

Railroad Commission of Texas
Site Remediation Section
William Travis Building
Austin, TX 78701
Attn: Peter Pope
Email: peter.pope@rrc.state.tx.us

52. Each submittal shall include reference to the docket number as shown on the first page of this Order.
53. All plans, reports, notices, or other documents submitted by Respondents pursuant to this Order, which make any representation concerning Respondents' compliance or noncompliance with any requirement of this Order, shall be accompanied by the following statement signed by a responsible corporate officer of the Respondents:

"I certify under the penalty of law that this document and all attachments were prepared by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel gathered and evaluated the information submitted. Based on my inquiry of any and all persons directly responsible for gathering and analyzing the information obtained, I certify that the information contained in or accompanying this submittal is to the best of my knowledge and belief, true, accurate, and complete. As to those identified portion(s) of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared in accordance with procedures designed

to assure that qualified personnel properly gathered and evaluated the Information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

54. The certification shall also include the name, title, date and signature of the person or persons completing the certification.
55. Respondents shall submit to EPA and the State of Texas, at the addresses listed in Paragraph 53, the results of all sampling, tests, or other data generated pursuant to this Order by Respondents or their agents, consultants, or contractors.
56. If any event occurs which causes delay in the achievement of any requirement of this Order, Respondents shall have the burden of proving that the delay was caused by circumstances beyond the reasonable control of Respondents or any entity controlled by Respondents, including but not limited to their contractors and consultants, which could not have been overcome by due diligence. Respondents shall notify EPA verbally within 72 hours, and in writing within 7 days of the verbal notification, of the anticipated length and cause of the delay, the measures taken and/or to be taken to prevent or minimize the delay, and the time table by which Respondents intend to implement these measures. If EPA agrees that the delay or anticipated delay has been or will be caused by circumstances beyond the reasonable control of the Respondents, the time for performance hereunder shall be extended for a period equal to the delay resulting from such circumstances. Respondents shall adopt all reasonable measures to avoid or minimize delay. Failure of Respondents to comply with the notice requirements of this paragraph shall constitute a waiver of Respondents' right to request an extension to meet the requirements of this Order.
57. Nothing in this Order shall be construed to limit or otherwise affect EPA's authority under any applicable law or regulation including but not limited to EPA's authority to conduct inspections, to seek access to property, to request the provision of information, or to bring a civil or criminal enforcement action under the Safe Drinking Water Act or other applicable statutes or regulations.

58. Respondents may assert a confidentiality claim covering all or part of any information submitted to EPA pursuant to this Order. Any assertion of confidentiality must be accompanied by information that satisfies the items listed in 40 C.F.R. § 2.204(e)(4) or such claim shall be deemed waived. Information determined by EPA to be confidential shall be disclosed only to the extent permitted by 40 C.F.R. Part 2. If no such confidentiality claim accompanies the information when it is submitted to EPA, the information may be made available to the public by EPA without further notice to Respondents. EPA will not accept any confidentiality claim with regard to any physical or analytical data.
59. EPA, its contractors, employees, and representatives are authorized to enter and freely move about all property at Gas Wells pursuant to this Order for the purposes of, *inter alia*, interviewing facility personnel and contractors; inspecting records, operating logs, and contracts related to the facility; reviewing the progress of the Respondents in carrying out the terms of this Order; conducting such tests, sampling, or monitoring as EPA or its representatives deem necessary; using a camera, sound recording, or other documentary type equipment; and verifying the reports and data submitted to EPA by the Respondents. Respondents shall provide EPA and its representatives access to the facility at all reasonable times and to any other property to which access is required for implementation of this Order. Respondents shall permit such persons to inspect and copy all records, files, photographs, documents, and other writings, including all sampling and monitoring data, that pertain to work undertaken pursuant to this Order and that are within the possession or under the control of Respondents or their contractors or consultants.
60. This Order is effective upon receipt and will remain in effect until EPA provides notice of its termination. Notice will be given after the requirements of the Order have been satisfied.
61. This Order does not constitute a waiver, suspension, or modification of the requirements of the Act or implementing regulations, which remain in full force and effect. Issuance of this Order is not an election by EPA to forego any civil or criminal action otherwise available under the Act.
62. EPA expressly reserves all rights and defenses that it may have, including but not limited to the right to disapprove work performed by Respondents pursuant to this Order and to modify documents submitted by Respondents and require that Respondents implement those modifications. Nothing in this Order shall diminish, impair, or otherwise adversely affect the authority of EPA to enforce the provisions of this Order. This Order shall not be interpreted to relieve Respondents of their obligations to comply with any provision of the Act, its implementing regulations, or any other federal, state, or local law.

63. Failure to timely complete any requirement of this Order shall be deemed a violation of this Order, beginning on the first day that performance is scheduled to commence.
64. This Order shall not limit or otherwise preclude EPA from taking additional enforcement action, civil or criminal, pursuant to the SDWA, or any other available legal authority, should EPA determine that such action is appropriate. Issuance of this Order is not an election by EPA to forego any civil or criminal action otherwise authorized under the Act or other laws.
65. All actions required to be taken pursuant to this Order shall be undertaken in accordance with the requirements of all applicable local, State, and federal laws and regulations.
66. Respondents shall obtain or cause their representatives to obtain all permits and approvals necessary under such laws and regulations to perform work pursuant to this Order and shall submit timely applications and requests for any such permits and approvals. Failure to obtain any necessary permits or approvals shall not constitute grounds for an extension pursuant to Paragraph 56 of this Order.
67. This Order may be modified or amended by EPA to ensure protection of the health of persons. Such an amendment shall be in writing, shall have as its effective date the date on which it is received by Respondents, and shall be incorporated into this Order.
68. If any provision or authority of this Order, or the application of this Order to any party or circumstance, is held by any judicial or administrative authority to be invalid, the application of such provision(s) to other parties or circumstances and the remainder of the Order shall remain in force and shall not be affected thereby.
69. This Order shall be binding upon the Respondents cited herein and all their heirs, successors, and assignees. No change in ownership of the leases or properties shall alter the responsibility of the Respondents under this Order.
70. This Order constitutes final agency action for purposes of SDWA § 1448, 42 U.S.C. § 300j-7.

OPPORTUNITY TO CONFER WITH EPA

71. Respondents have the opportunity to confer informally with EPA concerning the terms and applicability of this Order. Respondents must contact Tucker Henson, Office of Regional Counsel, at (214) 665-2718 within seven (7) days of receipt of this Order to schedule such a conference. This conference is not an evidentiary hearing, does not constitute a proceeding to challenge the Order, and does not give Respondents a right to seek review of this Order. Any such conference with EPA will be held at the following location:

U.S. EPA, Region 6
Office of Regional Counsel (6RC-EW)
ATTN: Tucker Henson
1445 Ross Avenue, Suite 1200
Dallas, TX 75202

12-7-10

Date


John Blevins

Director

Compliance Assurance and
Enforcement Division